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Final Report

Mine Seal Project, Phase 10  
Lewis & Clark County, Montana  
IFB 4317-G

January, 1987

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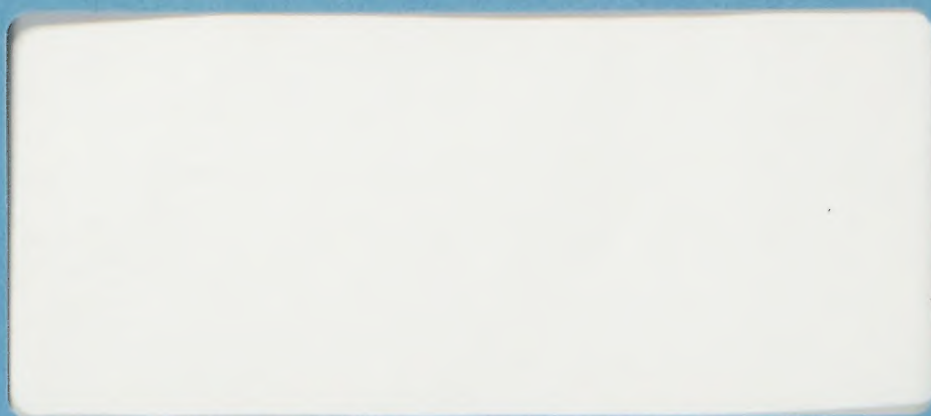
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## Final Report

Mine Seal Project, Phase 10  
Lewis & Clark County, Montana  
IFB 4317-G

January, 1987

Prepared for: Mr. Richard Juntunen, Chief  
Abandoned Mine Reclamation  
Bureau  
Department of State Lands  
1625 11th Ave.  
Helena, MT 59620

Prepared by: L.C. Hanson Company  
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Helena, MT 59624

Project Inspector: Allen Sawitke, P.E.





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## I. Introduction

### A. Project Objectives

The Phase 10 Mine Seal Project was undertaken to eliminate the public safety hazards resulting from unreclaimed mine openings at several abandoned hardrock mines in Lewis & Clark County, Montana. Closure of dangerous shafts through backfilling, bulkhead installation and fencing was accomplished to eliminate accidental entry.

### B. Project Location

The project covered ten sites located approximately fifteen miles northwest of Helena, Montana, in the Marysville Mining District. Legal descriptions are listed below and site locations are shown on the vicinity map contained herein.

#### Marysville Mining District

Carbonate Site	T11N R6W Sec. 10 NE
Crossroads Site	T12N R6W Sec. 36 SW
Earthquake Site	T11N R6W Sec. 6 NW
Gulf Site	T11N R6W Sec. 9 NE
Northside Site	T12N R6W Sec. 36 NE
Shakopee Site	T11N R6W Sec. 6 NE
Shannon Site	T11N R6W Sec. 3 SE
Tom Moran Site	T12N R6W Sec. 32 SE
Towsley Lode Site	T11N R6W Sec. 6 NE
Towsley Unpatented Site	T11N R6W Sec. 6 NE

### C. History

Hardrock mining has taken place in Montana since 1862 and was essentially unregulated from a reclamation standpoint for over one hundred years. This resulted in thousands of hazardous shafts and adits in mining districts across the state.

A brief history of the Marysville Mining District follows. Where production statistics are available for individual sites they are noted.

One of the bonanza gold districts of the western United States, Marysville is among the more productive areas in the country. The U.S. Bureau of Mines has credited this area with mineral production of about \$10.4 million from





1901 - 1948, however much of the mining was accomplished prior to this date. Other sources have estimated total production at \$30 million through 1932.

Towsley Gulch Mines - Between the years 1901 - 1948, 6,067 tons of ores were produced. This included 500 ounces of gold, 5,154 ounces of silver 35,477 pounds of copper, 607,224 pounds of lead and 21,192 pounds of zinc.

#### D. Site Description And Problems

The sites included in this project are located in or near residential areas, historic sites, close to public roads or in recreation areas. All mine openings threatened public safety. The shafts involved were of depth great enough to prevent unaided escape upon entry.

## II. Description of Project Reclamation

### A. Project Planning

Backfill was recommended for all mine openings to permanently eliminate the hazards. Many landowners refused to allow this, insisting instead on accessing bulkheads or fencing. These techniques do accomplish the goals of preventing accidental entry but are semi-permanent in nature and may require maintenance in the future.

### B. Chronological History

Pre-Bid Conference	August 23, 1984
Bid Opening	September 6, 1984
Contract Award	September 10, 1984
Contract Awarded To:	

Shumaker Trucking & Excavating Contractors  
P.O. Box 1442  
Great Falls, MT 59403  
(406)727-3537

Pre-construction Meeting	September 18, 1984
Notice to Proceed	October 1, 1984
Began Work	September 22, 1984
Temporary Winter Shutdown	October 19, 1984
Resumed Work	May 20, 1985
Project Completed	June 7, 1985







C. Equipment

Air Compressor with Air Drill  
Dynamite for Blasting Post Holes  
Cat Dozer

D. Construction Operations

The Contractor performed the following:

1. Backfilled 1 shaft
2. Installed combination barbed and woven wire fence at 8 sites
3. Install shaft cover - wood at 1 site (6'x 8')
4. Revegetated all areas disturbed by construction activities

III. Cost Summary

A. Final Payment Request

A copy of the Final Payment Request is contained in Appendix A. That document contains the final quantities and costs for each work item.

B. Change Order

The following Change Order was executed during the course of the project:

1. Change Order #1 - Excellent topsoil found during backfill operations at Shannon Site. Contractor salvaged and replaced topsoil.

C. Cost Per Site / Unit

The following summary describes the work performed (with estimated or measured quantities) and the total cost for each site:

- |                                  |           |
|----------------------------------|-----------|
| 1. Carbonate Site                | \$ 765.00 |
| a. Install wire fence (7.5 rods) |           |
| b. Install hazard signs (4 each) |           |
| c. Seed, fertilize & mulch       |           |





2.	Crossroads Site	\$ 774.00
	a. Install wire fence (7.8 rods)	
	b. Install hazard signs (4 each)	
	c. Seed, fertilize & mulch	
3.	Earthquake Site	\$ 220.00
	a. Install shaft cover - wood	
	b. Seed, fertilize & mulch	
4.	Gulf Site	\$ 1,278.00
	a. Install wire fence (9.6 rods)	
	b. Install hazard signs (4 each)	
	c. Seed, fertilize & mulch	
5.	Northside Site	\$ 990.00
	a. Install wire fence (7.5 rods)	
	b. Install hazard signs (4 each)	
	c. Seed, fertilize & mulch	
6.	Shakopee Site	\$ 2,908.00
	a. Install wire fence (34.1 rods)	
	b. Install hazard signs (8 each)	
	c. Seed, fertilize & mulch	
7.	Shannon Site	\$ 820.00
	a. Backfill 1 shaft (330 c.y.) incl. C.O. work	
	b. Seed, ferilize & mulch	
8.	Tom Moran Site	\$ 894.00
	a. Install wire fence (11.8 rods)	
	b. Install hazard signs (4 each)	
	c. Seed, fertilize & mulch	
9.	Towsley Site	\$ 1,639.00
	a. Install wire fence (19.3 rods)	
	b. Install hazard signs (8 each)	
	c. Seed, fertilize & mulch	
10.	Towsley Unpatented Site	\$ 2,399.00
	a. Install wire fence (27.3 rods)	
	b. Install hazard signs (12 each)	
	c. Seed, fertilize & mulch	
		-----
	Total Project Cost	\$ 12,687.00







VICINITY MAP  
MINE SEALING  
PHASE 10





## APPENDIX A





FROM November 1, 1985 TO June 2, 1986

PROJECT NAME MINE SEAL PROJECT, PHASE 10

LOCATION LEWIS AND CLARK COUNTY, MONTANA

PROJ. NO. IFB 4317-G

NAME OF CONTRACTOR SCHUMAKER TRUCKING & EXCAVATING CONTRACTORS, INC.

ADDRESS PO Box 1442 GREAT FALLS, CO. MT 59403

CHANGE ORDERS			CONTRACT STATUS			
No.	Description	Amount	Total Amount	Completed Amount	Uncompleted Amount	Per Cent Complete
1	As per attached Ch. Order No. 1	100.00	12,425.00	12,587.00	-0-	100
Total Change Orders			100.00	100.00		
CONTRACT TO DATE INCLUDING CHANGE ORDERS			12,525.00	12,687.00		

TOTAL RETAINAGE \$

SECURITIES ON DEPOSIT \$

ADJUSTED RETAINAGE \$

\*For use only when securities are on deposit in lieu of 10% retainage.

COMPLETED TO DATE \$ 12,687.00

PLUS MATERIALS ON SITE \$ -0-

TOTAL COMPLETED TO DATE \$ 12,687.00

\*10% OR ADJUSTED RETAINAGE \$ -0-

TOTAL AMOUNT EARNED TO DATE \$ 12,687.00

LESS PREVIOUS PAYMENTS \$ 3,952.87

AMOUNT DUE THIS PAYMENT \$ 8,734.13

LESS 1% TAX \$ 87.34

TOTAL DUE CONTRACT \$ 8,646.79

I certify that this claim is correct and just in all respects and that payment or credit has not been received.

Approved By:

Schumaker Trucking & Excavating Contractors (Contractor)

Montana Department of State Lands

Owner

By Joe Schumaker

Richard J. Hunt

Date 6-24-85

6/27/85

RECOMMENDED BY:

L. C. Hanson Company (Engineer)

By Samuel D. Schumaker

Date 6/26/85





## ITEMIZATION OF QUANTITIES AND COSTS

ITEM	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT PRICE BID	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK	PERCENT COMPLETE
SECTION 1 - 1983 FUNDS - EARTHQUAKE, SHAKOPEE, TOWSLEY LODE AND TOWSLEY UNPATENTED SITES						
1.	FENCE - WIRE TYPE CW OR CM	77 RODS	30.00 ROD	80.7 RODS	2,421.00	105
2.	PANEL - SINGLE TYPE CW	2 EACH	100.00 EA	2 EACH	200.00	100
3.	PANEL - DOUBLE TYPE CW	24 EACH	125.00 EA	24 EACH	3,000.00	100
4.	PANEL - CORNER TYPE CW	4 EACH	200.00 EA	4 EACH	800.00	100
5.	GATE - METAL 4 FT	10 L.F.	25.00 L.F.	10 L.F.	250.00	100
6.	DEADMAN	2 EACH	75.00 EA	1 EACH	75.00	100
7.	INSTALL STATE-FURNISHED SIGNS	24 EACH	5.00 EA	28 EACH	140.00	117
8.	SHAFT COVER - WOOD	LUMP SUM	200.00	LUMP SUM	200.00	100
9.	SEED, FERTILIZE, MULCH	LUMP SUM	100.00	LUMP SUM	100.00	100
SECTION 2 - 1984 FUNDS - CARBONATE, CROSSROADS, GULF, NORTHSIDE, SHANNON AND TOM MORAN SITES						
1.	BACKFILL MINE OPENING	LUMP SUM	700.00	LUMP SUM	700.00	100
2.	FENCE - WIRE TYPE CW OR CM	44 RODS	30.00 ROD	44.2 RODS	1,326.00	100
3.	PANEL - SINGLE TYPE CW	3 EACH	100.00 EA	4 EACH	400.00	133
4.	PANEL - DOUBLE TYPE CW	19 EACH	125.00 EA	19 EACH	2,375.00	100
5.	GATE - METAL 4 FT.	10 L.F.	25.00 L.F.	10 L.F.	250.00	100
6.	DEADMAN	2 EACH	75.00 EA	2 EACH	150.00	100
7.	INSTALL STATE-FURNISHED SIGNS	20 EACH	5.00 EA	20 EACH	100.00	100
8.	SEED, FERTILIZE, MULCH	LUMP SUM	100.00	LUMP SUM	100.00	100
					\$ 12,587.00	
ATTACHED CHANGE ORDER NO. 1					100.00	
TOTAL COMPLETED AMOUNT					\$ 12,687.00	





## 2.8 CHANGE ORDER

Order No. 1Date: June 20, 1985Agreement Date: September 18, 1984NAME OF PROJECT: MINE SEAL PROJECT - PHASE 10 - IFB 4317-GOWNER: Montana Dept. of State LandsCONTRACTOR: Shumaker Trucking & Excavating Contractors, Inc

The following changes are hereby made to the CONTRACT DOCUMENTS:

Justification: At the onset of backfilling the shaft at the SHANNON site, approximately 18" of excellent topsoil was encountered. The Contractor was directed to salvage, stock-pile and respread topsoil prior to seeding, fertilizing and mulching. The agreed price Change to CONTRACT PRICE: for this additional work was \$100.00.

Original CONTRACT PRICE \$ 12,425.00Current CONTRACT PRICE adjusted by previous CHANGE ORDER \$ 12,425.00 - no previous Change OrderThe CONTRACT PRICE due to this CHANGE ORDER will be (increased) (~~decreased~~) by:\$ 100.00The new CONTRACT PRICE including this CHANGE ORDER will be: \$ 12,525.00

Change to CONTRACT TIME:

The CONTRACT TIME will be (increased) (~~decreased~~) by 0 calendar days.The date for completion of all work ~~XXXX~~ will be June 7, 1985 (Date).  
wasRecommended by: L. C. Hanson Company James E. Selvin, EngineerAccepted by: Shumaker Trucking and Exc. Joe Shumaker, ContractorApproved by: Montana Dept. of State Lands M. Jeff Hagener, Owner

Abandoned Mine Reclamation Bureau





## APPENDIX B





Phase 10 Mine Seal Project  
Marysville Mining District, Lewis & Clark County  
Slide Log

1. Sept., 1983	Before:	Carbonate shaft - fencing site
2. Sept., 1983	Before:	Carbonate shaft - fencing site
3. Sept., 1984	Before:	Carbonate shaft - fencing site
4. May, 1985	During:	Carbonate shaft - notch brace rails with chainsaw
5. June, 1985	During:	Carbonate shaft - stringing wire
6. Aug., 1985	After:	Carbonate shaft - completed
7. Sept., 1984	During:	Crossroad shaft - dig for post holes
8. Aug., 1985	After:	Crossroad shaft - completed
9. July, 1983	Before:	Earthquake shaft - wood cover site
10. July, 1983	Before:	Earthquake Lode - oreshoot
11. Oct., 1984	After:	Earthquake shaft - completed cover
12. July, 1983	Before:	Gulf shaft - fencing site
13. July, 1983	Before:	Gulf shaft - fencing site
14. July, 1983	Before:	Gulf shaft - fencing site
15. Aug., 1985	After:	Gulf shaft - completed fence
16. Sept., 1983	Before:	Northside shaft - fencing site
17. Sept., 1983	Before:	Northside Lode - oreshoot
18. Sept., 1983	Before:	Northside shaft - fencing site
19. Sept., 1984	Before:	Northside shaft - fencing site
20. Oct., 1984	During:	Northside shaft - drill to blast fence posts
21. Oct., 1984	During:	Northside shaft - drill to blast for fence posts
22. Oct., 1984	During:	Northside shaft - drill to blast for fence posts
23. Aug., 1985	After:	Northside shaft - completed fence
24. Oct., 1982	Before:	Shakopee/Towsley sites - aerial view
25. Oct., 1982	Before:	Shakopee/Towsley sites - aerial view
26. July, 1983	Before:	Shakopee Lode - oreshoot
27. July, 1983	Before:	Shakopee shaft #1 - fencing site
28. Oct., 1984	During:	Shakopee shaft #1 - staked for panel construction
29. May, 1985	During:	Shakopee shaft #1 - dig for post holes
30. May, 1985	During:	Shakopee shaft #1 - dig for post holes
31. Aug., 1985	After:	Shakopee shaft #1 - completed fence
32. July, 1983	Before:	Shakopee shaft #2 - fencing site
33. July, 1983	Before:	Shakopee shaft #2 - fencing site
34. July, 1983	Before:	Shakopee shaft #3 - fencing site
35. Oct., 1984	Before:	Shakopee shaft #2 & #3 - fencing sites
36. May, 1985	During:	Shakopee shaft #2 & #3 - panel construction
37. Aug., 1985	After:	Shakopee shaft #2 & #3 - completed
38. Aug., 1985	After:	Shakopee shaft #2 & #3 - completed fence with gate & signs
39. July, 1983	Before:	Shakopee shaft #4 - fencing site
40. Sept., 1984	Before:	Shakopee shaft #4 - fencing site
41. Oct., 1984	During:	Shakopee shaft #4 - loading holes to





		blast post holes
42. Sept., 1983	Before:	Shannon shaft - for backfill
43. Sept., 1984	Before:	Shannon shaft - for backfill
44. Sept., 1984	Before:	Shannon shaft - for backfill
45. Sept., 1983	Before:	Shannon shaft - for backfill
46. Sept., 1983	Before:	Shannon shaft - for backfill
47. May, 1985	During:	Shannon shaft - backfilling
48. May, 1985	During:	Shannon shaft - completed backfill
49. May, 1985	During:	Shannon shaft - completed backfill
50. Aug., 1985	After:	Shannon shaft - reclaimed site
51. July, 1986	After:	Shannon shaft - backfill subsided
		Hardrock Maintenance Project
52. July, 1986	After:	Shannon shaft - backfill subsided
		Hardrock Maintenance Project
53. July, 1983	Before:	Tom Moran shaft - fencing site
54. July, 1983	Before:	Tom Moran shaft - fencing site
55. June, 1985	During:	Tom Moran shaft - fence construction
56. Aug., 1985	After:	Tom Moran shaft - completed fence
57. July, 1983	Before:	Towsley shaft #1 - fencing site
58. Aug., 1985	After:	Towsley shaft #1 - completed fence
59. Aug., 1985	After:	Towsley shaft #2 - completed fence
60. July, 1983	Before:	Towsley Unpat - headframe & oreshoot
61. Oct., 1982	Before:	Towsley Unpat shaft #1 - fence site
62. June, 1985	After:	Towsley Unpat shaft #1 - completed fence
63. Oct., 1982	Before:	Towsley Unpat shaft #2 - fence site
64. Aug., 1985	After:	Towsley Unpat shaft #2 - completed fence
65. Aug., 1985	After:	Towsley Unpat shaft #3 - completed fence









